

HAWAII COOPERATIVE EXTENSION SERVICE

Hawaii Institute of Tropical Agriculture and Human Resources

University of Hawaii at Manoa

COMMODITY FACT SHEET BA-3(A)

FRUIT



BANANAS

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Figure 1. 'Williams Hybrid' bananas.

Family: Musaceae (Monocot)

Genus: *Musa*

Origin: Asian tropics

Description

A large perennial herb with leaf sheaths forming trunk-like pseudostems. Leaves 8-12 in number, up to 9 ft. long and 2 ft. wide. Root development extensive in loose soil, up to 30 ft. laterally.

Inflorescence

Initiated from true stem underground ("corm") 9-12 months after planting. Grows through the center of the pseudostem. Flowers form spirally in clusters around the main axis. In most cultivars the female flowers are followed by a few "hands" of neuter flowers in which ovaries and stamens are aborted. This is followed at the terminal end with male flowers enclosed in bracts. Stamens are functional but ovaries are aborted.

Fruits

Mature about 60-90 days after flowers first appear. Each bunch consists of variable numbers of "hands" along a central stem. Each "hand" consists of two transverse rows of fruits ("fingers").

Harvesting

The bunch can be harvested when the fingers turn light green and the corners become rounded rather than angular. The pseudostem should be cut back after the bunch is removed.

Post-harvest

The optimum conditions for ripening bananas are at temperatures of 68°-70°F and 90% relative humidity. As the fruit ripens, sugar content increases while starch content decreases. When stored below 58°F, fruits develop discoloration and flesh becomes mealy.

Varieties

Three major groups of dessert bananas are grown in Hawaii:

- (1) Bluefields Group (susceptible to Panama wilt, may be resistant to Freckle)
 - (a) 'Bluefields' (Syn. 'Gros Michel').
Height: 20 ft. or more, Bunch weight: 60-100 lb. (6-9 hands). Easily damaged by strong winds.
 - (b) 'Dwarf Bluefields' (Syn. 'Cocos').
Height: 10-15 ft., Bunch weight: 60-100 lb. (6-9 hands).
- (2) 'Brazilian' (frequently and erroneously referred to as 'Apple'). Height: 20-25 ft., Bunch weight: 20-45 lb. (5-7 hands). Withstands winds better than most other varieties. Tolerant to Panama wilt and Burrowing nematode.
- (3) Cavendish Group (tolerant to Panama wilt)
 - (a) 'Chinese' (Syn. 'Dwarf Cavendish').
Height: 7-10 ft., Bunch weight: 40-90 lb. (6-9 hands). Susceptible to Freckle, choke-throat, and Finger-tip rot.

- (b) 'Williams Hybrid'. (Syn. 'Williams').
Height: 9–12 ft., Bunch weight: 60–100 lb. (9–14 hands). Plants may need propping because of the large fruit bunch. Susceptible to Freckle and Burrowing nematode.
- (c) 'Valery' (Syn. 'Taiwan', 'North Banana', 'Tall Mons Mari').
Height: 10–15 ft., Bunch weight: 60–100 lb. (9–10 hands). Pseudostems relatively weak, usually requires support. Tolerant to cool temperature. Susceptible to wind damage.
- (d) 'Hamakua' (Syn. 'Bungulan', 'Monte Cristo').
Height: 25 ft., Bunch weight: 50–100 lb. (6–9 hands). Susceptible to wind damage. Poor keeping quality. Greenish-yellow when ripe.

Cooking banana (or plantain) varieties can be placed in the following groups: Largo, Maia maole, Popoulu, Red.

Propagation

Bananas are easily propagated from old corms ("bullheads") taken from plants which have already borne fruits, young offshoots with narrow leaves ("sword suckers"), or larger offshoots with expanded leaves ("maiden suckers"). If enough buds are present, large bullheads can be halved or quartered.

It is best to treat planting materials for nematodes:

- (1) Cut off bottom half of corm and, if discolored, trim off up to 2/3 of the bottom of the corm until only clean white tissue remains.
 - (2) Trim off about 1/2 in. of tissue around the sides of the corm.
 - (3) If bullheads are used, cut off the pseudostem 3–4 in. above the top of the corm.
 - (4) Either,
 - (a) Immerse the trimmed corms in hot water bath with 1/5000 Panogen or 1/4000 Formaldehyde at 50°–52° C (122°–126° F) for 15 to 20 min. Before planting, place the corms in a transparent plastic bag at room temperature until new roots begin to appear.
- Or,
- (b) Dip trimmed corms in either 1/1000 Panogen, 1/2000 Formaldehyde, or 10% Chlorox. Coat the corms with parafilm wax prior to shipment or storage.

Planting Distance

Depends on management practices and varieties planted. Plants are not usually planted closer than 8–10 feet apart. The number of suckers developing should be kept to a maximum of 4 or 5 per mat, depending on planting distance and other practices.

Soil

Bananas grow well over a wide range of Hawaiian soil. The ideal soil should be well-drained but have good water retention capacity. Soil pH should be between 5.5 and 6.5.

Fertilization

In mature orchards, the application of 10–5–20 at the rate of 2 lb. per mat every 4 months should be adequate.

Location

Bananas grow best in areas with 100 in. or more of well-distributed rainfall per year. Irrigation is needed if rainfall is inadequate or irregular. Plants are generally susceptible to wind damage. Therefore, they should be planted in protected areas.

Diseases

Panama wilt—fungus (*Fusarium oxysporum f. cubense*); restricted to 'Bluefields'

Freckle—fungus (*Phyllostictina musarum*)

Black leaf streak—fungus (*Mycosphaerella fijiensis*)

Cigar-end diseases—fungi (e.g., Finger-tip rot, *Hendersonula toruloidea*); prevented by covering bunches with bags.

Nematodes—Burrowing (*Radopholus similis*), Root-knot (*Meloidogyne* spp.), Spiral (*Helicotylenchus multicinctus*), Lesion (*Pratylenchus* spp.)

Choke-throat—Physiological, caused by low temperatures.

Insect Pests

Oriental fruit fly (*Dacus dorsalis*)

Spiraling whitefly (*Aleurodicus dispersus*)

Banana skipper (*Pelopidas thrax*)

Mealybug (*Dysmicoccus neobrevipes*)

Chinese rose beetle (*Adoretus sinicus*); on young suckers

Banana rust thrips (*Chaetanaphothrips orchidii*)

Banana aphid (*Pentalonia nigronervosa*)

Green garden looper (*Chrysodeixis chalcides*)

Armored scales (several species)

Banana root borer (*Cosmopolites sordidus*)

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